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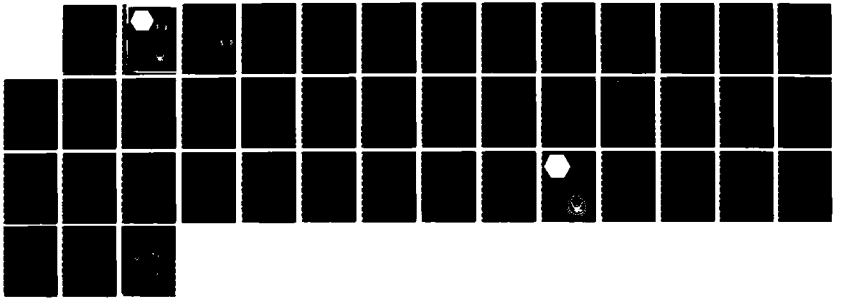

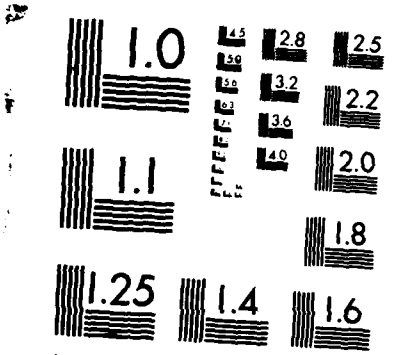

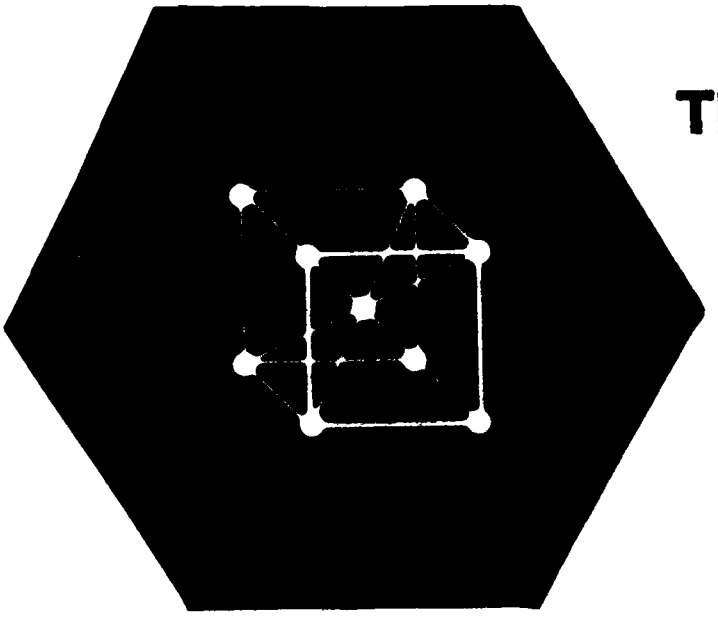

THE FUTURE IS NOW

HBCU/ONR
PLANNING WORKSHOP

Mathematical Sciences Division

THE HOWARD INN

WASHINGTON, D.C.

OCTOBER 28–29, 1985

(1)

HBCU/ONR
PLANNING WORKSHOP
MATHEMATICAL SCIENCES DIVISION
OFFICE OF NAVAL RESEARCH
DEPARTMENT OF THE NAVY

FINAL REPORT
RE: GRANT NO. N00014-85-G-0190

Howard University
2400 6th Street, N.W.
Washington, D.C. 20059

Prepared by:

Avis Y. Pointer, Ph.D.
Project Director

September 30, 1986

ACKNOWLEDGEMENTS

This important workshop would not have been possible without the involvement of many people. It is impossible to list the names of each individual, but I would like to single out some whose assistance, guidance, dedication and hard work were indispensable, and without whom this workshop would have been impossible.

Dr. Douglas DePriest
Scientific Officer
Mathematical Sciences Division
Office of Naval Research
U.S. Department of the Navy

Dr. Roger D. Estep, D.V.M.
Vice President for Development
and University Relations
Howard University

Mrs. Cheryl J. Dobbins
President
C.J. Dobbins Associates

I thank you for your belief and commitment to this workshop and all the goals it attempted to accomplish.

Sincerely,

Avis Y. Pointer

Avis Y. Pointer, Ph.D.
Project Director

II. WORKSHOP PLANNING PROCESS

A. GOALS AND PURPOSES

This workshop was developed in response to a perceived need by the Office of Federal Affairs, Howard University, for a more structured approach to the determination of mathematical sciences interest and capability within the Historically Black College and University (HBCU) community which can be utilized by the Office of Naval Research (ONR). That need was expressed to the Mathematical Sciences Division in January, 1985. Those discussions subsequently resulted in a planning grant which has as its goal the exchange of information between ONR and the HBCUs adequate enough to result in an increased number and focus of grant/contract proposals from the HBCUs.

To this end, the workshop was designed to accomplish three specific objectives:

- For HBCU representatives to understand the mission and functions of the ONR and how HBCUs can contribute to the accomplishment of specific program objectives;
- For HBCUs to understand the processes involved in obtaining Federal grants, contracts and entering into cooperatrive agreement arrangements; and
- For ONR representatives to have increased their awareness of the research capabilities of selected Black colleges and how those colleges can assist ONR to accomplish its program objectives.

B. PARTICIPANTS

Participation in the workshop was totally voluntary. The Office of Naval Research was committed to assuring that the quality of information shared with

the HBCUs was both current and appropriate to rendering an informed decision regarding the pursuit of ONR funding. With that in mind, each Scientific Officer from the Mathematical Sciences Division consented to participate.

Scientific and engineering research at Historically Black Colleges and Universities is encouraged at the Office of Naval Research by the HBC Council which is composed primarily of ONR scientific officers. The objectives of the Council are to: foster general support of meritorious research proposals originating from HBCs; assist selected HBCs in strengthening their capability to conduct research of interest to ONR; and assist, when appropriate, in the development of training programs geared to increase the participation of Blacks and other minorities involved in research of interest to ONR.

To this end, the HBC has a formidable trackrecord. Between fiscal years 1979 and 1985, ONR has seen funding of research at Historically Black Colleges and Universities increase from approximately $41,000 to $2.5 million. This workshop was viewed as a mechanism for the continuation of these efforts.

Since partial support for the workshop had come from ONR's HBC Council, their participation was essential. Feedback and guidance from the group was what made possible the formulation of the overall agenda and the effective translation of organizational objectives regarding the HBCUs into programmatic realities around which the workshop was planned.

To assure a balance between the technical and procedural, participants were invited from the Office of Naval Research Contract Negotiation Branch. Their presentation was strategically focused upon the ONR procurement process. The workshop planners considered it essential that solid information be provided about ONR's internal review process so that submission and their timing would be reflective of those considerations.

In order to increase the probability that the information shared during the workshop would be received by the most appropriate and authorized member(s) of the campus family, a two-phased HBCU participant selection process was carried out. First, 13 institutions were identified which offered at least a Masters Degree in Mathematics or Computer Science. Telephone calls were made to the presidents of these institutions to determine the names of their mathematics/computer science department chairs and whether they would be interested in participating in an invitational workshop on the application of the mathematical sciences to the mission of the Office of Naval Research. Care was taken to explain that follow-up on this matter would occur with their designated administrator. From this step, it was established that the following institutions were interested in being invited:

Alabama A&M University

Alabama State University

Atlanta University

Hampton University

Howard University

Jackson State University

Morgan State University

North Carolina A&T State University

North Carolina Central University

Prairie View A&M University

Southern University

Texas Southern University

Virginia State University

This was followed by a confirmation letter (See Appendix A) to the president with an information copy supplied to the designated administrator or department

head. This was designed to further alert the person who most likely would be responsible for preparing the institution's response. It was at this point that the second phase was put in place.

Eligibility to have travel and accommodation expenses for two institutional researchers and one administrator per HBCU was activated by the Office of Naval Research upon the completion and submission of at least one proposed research project concept outline per institution (See Appendix B). Such an approach was an attempt to be certain to have potential investigators in attendance at the workshop; to overcome a common complaint made by HBCU investigators that the person most in need of the technical information which the ONR Scientific Officers would have to offer is seldom allowed sponsored travel; and to establish a definitive agenda and point of discussion between ONR and HBCU personnel.

Because the request for participation was not a general one, the responses and respondents were focused in terms of their interest either in learning more about or actually conducting research in:

- o Theoretical and Applied Mathematics
- o Numerical Analysis and Related Computational Architecture
- o Mathematical and Computational Statistics and Special Programs
- o Operations Research
- o Discrete Mathematics

Responses were solicited by way of a specially formatted 2-page "Concept Outline" form. Investigators were to complete these documents by supplying brief capsulized versions of their proposed interests. Upon their receipt by the Mathematical Sciences Division, the concept outlines were distributed internally to the respective Scientific Officer. Assessments were made of their consistency with

ONR research priorities. Indications were then made of the ones for which the greatest interest existed within the Mathematical Sciences Division. All were then transmitted to representatives of the HBC Council who selected at least one concept outline to be presented from each institution. The Council's attempt was to have the presentation session as broadly representative of the range of mathematical interests of these institutions as possible.

This process generated 35 HBCU participants - 27 of whom were potential investigators (See Appendix C).

III. INTENT OF AGENDA AND SUMMARY OF EVENTS

Careful review of the agenda (Appendix D) reveals a conscious effort on the part of the workshop planners to:

- o establish an agenda that was topic-specific;
- o meet the expectations of campus-based investigators who would want and need to know whether their conceptual topics were technically sound, indicated a reasonable approach, consistent with the Navy's mission, and reflective of the priorities within the Mathematical Sciences Division;
- o transmit as much information about the Mathematical Sciences Division and the Mathematics Departments at the HBCUs;
- o maximize interaction between ONR and HBCU participants;
- o increase communication among HBCU mathematicians and computer scientists;

To achieve these objectives, Dr. Edward J. Wegman, Head of the Mathematical Sciences Division set the tone of the workshop by indicating his personal interest in

increasing the role of HBCUs in ONR mathematical sciences division research. This was specifically to address the apparent shortfall in the active involvement of minorities and women in mathematical research.

Dr. Wegman evidenced a cogent understanding of the reality of science and mathematics on most HBCU campuses. Since many HBCUs have historically been and still are primarily teaching institutions, he spoke of the heavy teaching load with which most of the investigators present could be faced. With that as the case, in addition to explaining the organization, budget mark, internal review process, funding cycle and general interests of the Division, Dr. Wegman went to great lengths to describe several existing programs which the participants were encouraged to explore in addition to the possible funding of their specific research concepts.

The Threshold Program was offered as a viable option. As explained, it is a new pilot activity developed by ONR's HBC Council in conjunction with the Mathematical Sciences Division. The primary focus of the program is to help calibrate the individual research initiatives which may be isolated with particular researchers at a single or several institutions toward a critical mass of expertise. The program attempts to recognize individual talent resident at these institutions, the time constraints of conducting research at a teaching institution along with the need to strengthen facilities and faculty through hands-on exposure and interaction with other university-based, public and private sector investigators. It is projected to be operational in FY87 with initial funding approximating $300-400,000 per annum. The plan is to assure this funding level over a 3-5 year period during which the strengthening process will occur. Such a cluster of individuals would prove formidable in competing for and conducting "cutting edge" research.

Each institutional participant was encouraged to develop a Threshold proposal over the next several months. They should feel free to contact the respective

Scientific Officer for feedback and guidance as may be necessary. Full proposals should be submitted by February, 1986 for consideration for FY87 funding.

Realistically, ONR anticipates funding only one Threshold Program at an HBCU for FY87. Such a designation can, however, conceivably be expanded into long-term institutional support. Even the process of developing a Threshold proposal can prove instructive for the eventual growth and development of similar mathematics program funded by other mission agencies.

Selection of that one Threshold Program will be predicated upon the technical merit of the ideas proposed as well as the know-how of the individuals involved in the conduct of the research. ONR will seek proof of institutional commitment as evidenced by release time, instrumentation (existing and needed), publications, attendance at professional meetings, etc. Dr. Wegman's comments were further reinforced by Mr. Charles Luther, Chairman of ONR's Historically Black College Council. After providing the attendees an historical recap of the genesis and aim of the HBC Council, Mr. Luther detailed how the Council functions presently and to what end its efforts are focused.

In addition to strongly endorsing the Threshold Program pilot, he identified the following programs which HBCU administrators should know exist and encourage their mathematics faculty to pursue.

- o Graduate Fellowship Program
- o Young Investigators Program
- o Summer Faculty Research Program
- o DOD University Research Instrumentation Program
- o High School Apprenticeship Program

Representatives from the HBCUs were then given an opportunity to present the concepts outlined in writing for ONR as basis for their invitation to the workshop.

In total, 27 outlines were received from 11 participating institutions. Both Alabama State and Prairie View A&M chose not to accept the invitation to participate.

Dr. Charles Bell, noted Black statistician and eminent researcher with the Office of Naval Research, was quite poignant in bringing a message of hope to the assembled conferees. He pointed out that the life of a mathematician is very solitary. By way of vignettes, Dr. Bell charged the group, however, to dedicate itself to the persistence that is needed to carry out research indicative of true dedication to the field. This, he projected, was the only sure route to excellence.

Following Dr. Bell's presentation, the Scientific Officers of the Mathematical Sciences Division instituted a three-part information dissemination process regarding the program opportunities and priorities in their respective specialty areas.

The first was a general panel discussion during which all participants were allowed to understand the present and future program direction in each area within the Mathematical Sciences Division. The second was a more focused presentation made in small groups to those investigators and administrators who had specific interest in a given program area. These smaller sessions provided for exchange of ideas on specific topics generic to a program area. Moreover, this arrangement allowed the HBCU participants to at least identify their peers who also might share an interest in a given thematic area. The third part of the information dissemination process entailed the scientific officers' interaction one-on-one with submitting investigators and administrators from the HBCUs who may have been representing investigators whose concept outlines had been forwarded and reviewed. From these sessions it was projected that institutional representatives would leave the workshop with a clear sense of the viability and prospect of funding of their ideas by the Mathematical Sciences Division.

The second day's activities began with a "nuts and bolts" session on the procurement and contract monitoring process as presented by Mrs. Anna M. Weston, Contract Negotiation Branch Section Leader - who is responsible for processing all Mathematical Sciences Division's procurements - and Mr. Michael McCracken. They were both quite clear and direct in detailing their internal process of "Total Business Systems Review" as well as in providing samples of exemplary documentation that can be used as a guide for submissions.

Dr. James Donaldson, Professor and Chairman on Leave, Mathematics Department, Howard University, addressed the topic "The Potential for Networking Among HBCUs." He began his comments by candidly admitting that he rather doubted that anything that he would say could be categorized as "new knowledge". Nonetheless, he proceeded to outline the rationale and steps of a realistic action plan which could be carried out by each participating institution.

By definition, Dr. Donaldson, too, proposed that mathematics research is a very individualized endeavor. Nonetheless, in a vacuum, it is very difficult to make significant contributions in any area of research. Interactions were suggested both between colleagues within departments as well as across departments within the same university or at other universities. That interaction should ultimately be designed to result in publications, grants, faculty exchanges, dissertation advisement, speaking fellowships, etc.

Beyond the university, interactions should be encouraged with professional societies such as the:

- o National Association of Mathematicians
- o American Mathematical Society
- o Society for Industrial and Applied Mathematics
- o American Statistical Association

- o Institute of Mathematical Statistics
- o Association for Computing Machinery

His contention was that joining such organizations provided substantial programs of scientific support which are invaluable. It is imperative that faculty attend these sponsored meetings because in many respects it is the most efficient way to remain current with the latest trends in the sciences since publications usually lag developments by 2-3 years.

Industrial and national laboratories and agencies also offer invaluable opportunities for the interaction and networking through rich programs of faculty exchange, faculty loan, joint research, scholars' speaking programs, facility use, etc. Such working relationships were projected as too invaluable to exist without full exploration by the HBCU scientific community.

To facilitate the possible establishment of alliances between investigators interested in similar areas of pursuit, the Networking Luncheon was arranged as the final activity in an attempt to allow for the initiation of preliminary discussions on possible collaborative research, speaker exchange programs, etc. This segment of the agenda was open-ended and unstructured by the program planners.

IV. EVALUATION RESULTS

Seventy-four percent (74%) or twenty-six (26) of the 35 HBCU participants volunteered to respond to the post-workshop evaluation instrument (Appendix E). The Likert-type evaluation format provided for the respondents' expression of strong agreement or disagreement with statements regarding the organization and presentation of the workshop. The numerical designation "1" indicated strong

disagreement; "3" indicated agreement; while "5" indicated strong agreement. For analysis purposes, a mean designation of "3" or less was considered less than satisfactory and the basis for reassessment and serious planning consideration in subsequent workshops of this nature. Feedback was solicited in the three broad categories of logistics, workshop format and follow-up.

A. LOGISTICS

The range of responses for this general category of evaluation was quite high (4.04 - 4.69). The Howard Inn personnel and accomodations were indicated as more than satisfactory. Though food and beverage service was rated quite high, participants felt that the meal quality was not on a commensurate level of excellence. Despite the fact that there were problems the first day with the adequacy of the audio-visual equipment supplied by The Howard Inn, evaluation results indicated that the overall assessment of workshop facilities and meeting arrangements was not negatively impacted by them.

The big winner in this category was the Howard University Department of Federal Affairs staff who were viewed as both friendly and helpful throughout the workshop planning and execution. Written and verbal logistical instructions were both clear and adequate.

B. WORKSHOP FORMAT

ONR presenters did indeed prove to be instructive in explaining the general focus of the Mathematical Sciences Division (4.42), organization and objective of the HBC Council (4.42), and the ONR procurement process (4.29).

On the matter of the core program cluster presentations, area directions and priorities also received high ratings (4.08). Participants felt that adequate time was allowed for general give-and-take (4.05) which may account for why it was perceived that indepth information dissemination resulted.

During the one-on-one conferences, respondents indicated that ONR Scientific Officers provided them with substantive information (3.85). The lowest assessment (3.30), was provided in response to the issue of substantive information being shared "about my institution and its mathematical sciences program." Careful review of this issue indicates that the statement, as indicated, may have been ambiguous. Unclear is whether the HBCU participants were being expected to respond to their assessment of the scientific officers' ability to provide them such information on their institutions or of the HBCU participants' ability to provide that information in the one-on-one conferences. In any event, an assessment of 3.30 is still well above the indicator of a satisfactory response.

Workshop participants left the workshop with a clear plan of action to be implemented upon returning to campus (4.42). It is reflective of definite ideas on successful research programs in mathematics received from the session. Each also left with a clear assessment of how their institution's concept outlines were received by ONR. The potential for networking among HBCUs was high as was their understanding of the research interests of colleagues at other HBCUs.

C. FOLLOW-UP

In order to submit a competitive proposal to ONR, follow-up assistance was expressed in two high priority areas. First, the participants indicated in any number of ways that they wanted this workshop not to be the last contact they would have with specific Scientific Officers in the Office of Naval Research, Mathematical

Sciences Division. Though this may appear to be an odd request for follow-up assistance, it is important to realize that many have been the federal agencies and offices that have been in limited contact with these same institutions on one occasion, never to be heard from again. Such a request speaks to the seeming good rapport established between the HBCU participants and the ONR personnel.

The second is somewhat related to the first area in that the potential investigators were very concerned about making future submissions which were "on-target" with ONR priorities. That, it was felt, would be facilitated by their receiving frequent communication on evolving ONR goals, objectives, priorities and research trends. These were expressed in general as well as specific terms, i.e., signal processing, specialized bibliographies, summer fellowships.

As well, assistance was expressed in determining hardware cost allowances/limitations in proposals and on how well a proposed budget should match a research project.

The few written comments received from participants acknowledged that ONR's organizational interests were extremely focused when compared with other federal research organizations such as the National Science Foundation and the National Institutes of Health. With that as the case, additional "awareness" activities need to be implemented by ONR to sharpen HBCU proficiency in areas of Naval research priority. Most, however, applauded ONR and Howard University for doing a great job in organizing a "helpful," "successful," "pleasant," and "productive 2-day" conference.

VI. RECOMMENDATIONS

Several very cogent recommendations came from this group. They require action to be taken by both the assembled HBCU mathematicians and administrators as well as by ONRs Mathematical Sciences Division.

A. HBCU ACTIONS

1. Finalize the concept outlines which were reviewed by ONR and designated satisfactory candidates for FY86 funding consideration. Submission should be no later than December 31, 1985.

2. All workshop participants should organize the submission of a Threshold Program proposal. Submissions should be made no later than March 31, 1986 for funding consideration in FY87.

3. Mathematicians at the Historically Black Colleges and Universities need to build on the type of interaction and networking which occurred during the two-day workshop. This should not be the last time that this group comes together to become involved and informed about potential research in their discipline area.

4. Seminars around thematic areas of mathematics interests should be organized as part of each institution's project and Threshold submission to ONR. This would facilitate the exchange of information within the HBCU community and enable greater thematic interaction among HBCU mathematicians. Seminars should include travel and honorarium provisions.

5. Where practical, clustering for interaction among institutions should be explored. This would facilitate the peer review of

concept submissions and research findings and sharing of area-specific expertise among institutions; and may result in joint proposal submissions that have been strengthened by the focused attention of many collaborators.

B. ONR ACTIONS

1. To maximize the ability of the HBC Council to continue to leverage its funds such that they double and in some instances triple the funding available to the HBCUs, specific data on anticipated follow-up activities is needed to be immediately derived from the HBCU workshop participants.

2. Based on feedback provided by workshop participants, ONR should develop a number of mechanisms which will enable HBCU faculty to intereact with other research specialists who have been funded previously in areas of similar scientific interest.

3. Colleague-to-Colleague leverage should be utilized by the Mathematical Sciences Division leadership to encourage access by HBCU researchers to mathematics and non-mathematics related research opportunities available in other divisions of ONR as well as in other defense related research units such as the Army and Air Force.

4. Continued communication with the HBCUs should provide useful information that can be used to increase proposal submissions as

well as strengthen proposal quality. This is in recognition of the fact that general program information is of very little use to most HBCUs. Few are set up as research centers which have large staffs dedicated solely to the pursuit of researching and mobilizing responses to "most probable" funding.

5. ONR publications should be previewed prior to final publication to assure that they contain HBCU research entries and findings. Such documentation becomes a source of encouragement to HBCU researchers who are constantly in need of having the substantiveness of their research publicly recognized and confirmed.

APPENDIX A

CONFIRMATION LETTER

HOWARD UNIVERSITY
2900 VAN NESS STREET, N.W.
WASHINGTON, D.C. 20008

DEPARTMENT OF FEDERAL AFFAIRS

September 10, 1985

Dear :

This letter confirms a telephone call which you received from my office in August, 1985. During that time, you were invited to participate in a two-day workshop funded by the Office of Naval Research (ONR), Mathematical Sciences Division and the Historically Black College Council. The workshop will be held October 28 - 29, 1985, at The Howard Inn, Howard University, Washington, D.C.

The major workshop goal is to bring together representatives of the Mathematical Sciences Division and representatives of the historically black colleges and universities (HBCUs) offering degrees in mathematics and statistics. During the workshop, HBCU representatives will discuss ideas and suggestions which would lead to increased HBCUs faculty participation in the Mathematical Sciences Division's research programs.

To encourage your participation, our budget allows us to defray air travel, room and ground transportation expenses for a maximum of three people from your institution. Project staff will assist you with these various arrangements.

In order for your institution's representatives to be funded to participate in this workshop, we are requesting that a minimum of two people from your campus prepare a two-page concept paper on a research topic. Additionally, we would like the faculty members to provide a discussion about some of the key ideas in the concept paper. This discussion should be no longer than fifteen minutes. For the new fiscal year, some of the Division's priorities are: applied analysis, numerical analysis and related computational architecture, mathematical and computational statistics, operations research, statistical signal analysis and discrete mathematics. We believe that you will want to take advantage of this unique opportunity to meet with representatives of the Mathematical Sciences Division, ONR, and other faculty researchers from the HBCUs.

Please complete and return to me by September 23, 1985, the enclosed Workshop Registration form. Should you have any questions about this workshop please contact me at 202-686-5853.

Sincerely

Enclosure

Avis Y. Pointer, Ph.D.
Director

cc: Dr. Douglas DePriest
Scientific Officer
Mathematical Sciences Division
Office of Naval Research

APPENDIX B

SAMPLE

RESEARCH PROJECT OUTLINE
AND
LISTING OF HBCU INVESTIGATORS
AND CONCEPT OUTLINE TOPICS

INVESTIGATOR: Carlos R. Handy

INSTITUTION: Atlanta University

TITLE: Strong Coupling Physics and Positivity

CORE PROGRAM AREA: Mathematical and Physi

TELEPHONE NO.: (404) 681-0251

OFFICE OF NAVAL RESEARCH
Mathematical Sciences Division
CONCEPT OUTLINE

I. TOPIC

Relevance of nonnegativity properties of differntial equation systems for solving singular perturbation-boundary layer physics problems.

II: LONG RANGE SCIENTIFIC OBJECTIVES

To develop a comprehensive theory and computing apparatus for solving linear singular-perturbation systems by appealing to inherent nonnegativity properties, combined with mathematical developments arising within the classic "moment problem".

This is a novel approach and should be capable of yielding more accurate solutions for such things as drag coefficients, etc. Of particular interest to this research will be multi-boundary layer systems.

III: PROJECT OBJECTIVES

To develop the above ideas in the context of various one dimensional, linear, boundary layer problems in fluid dynamics, and plasma physics.

INVESTIGATOR: Carlos R. Handy CORE PROGRAM AREA: Mathematical Physic

TOPIC: Strong Coupling Physics and Positivity

IV. PROJECT APPROACH

Given a linear boundary layer equation where the solution is known to be non-negative, $f(x) \geq 0$, one can define a recursive relation for the appropriate Hausdorff moments. The moments will be general functions of the various parameters of the system, including such things as the drag coefficient at the boundary layer (for hydrodynamic systems). One may then determine the drag coefficient through application of Hausdorff-inequalities arising from the theory of the moments problem.

The above general program will be developed for various types of systems in hydrodynamics and plasma physics.

V. PROJECTED PROJECT LENGTH 3 years

VI. PREVIOUS ACCOMPLISHMENTS IN THIS AREA

The general theme expounded above has been applied in other areas with dramatic results. In particular:

1. C.R. Handy and D.Bessis, Physical Review Letters, Vol. 55, No. 9 August '85.

   Title: Rapidly Convergent Lower Bounds for the Schrodinger Equation Ground State Energy

2. C.R. Handy, Physics Review D, Vol. 31, pg. 3168, 1985.
3. C.R. Handy, Physics Review D, Vol. 24, pg. 378, 1981.

VII. SPECIAL INSTRUMENTATION OR EQUIPMENT NEEDS Supercomputer access such as the CRAY

Must be received by October 15. Mail to:

Avis Y. Pointer, Ph.D.
Director
Department of Federal Affairs
Howard University
Suite G-20, Notre Dame Building
2900 Van Ness Street, N.W.

HBCU INVESTIGATORS AND CONCEPT OUTLINE TOPICS

ALABAMA A&M UNIVERSITY

- Discriminant Analysis - Temple and Shipman

ATLANTA UNIVERSITY

- Relevance of Nonnegativity Properties of Differential Equation Systems for Solving Singular Perturbation-Boundary Layer Physics Problem - Handy
- Determining Optimal Fleet Spare Capacity Margins - Hunter
- Finite Difference Models of Nonlinear Differential Equations - Neal
- Control and Identification of Distributed Control Problems, Nonlinear Optimization - Medhin
- Construction of Approximate Analytic Solutions to Nonlinear, Singular Oscillator Equations - Mickens
- Stochastic Inequalities for Large Scale Systems and Their Application to Turbulence in Dissipative Dynamical Systems - Sambandham and Bota
- Computational Techniques in Dynamic Programming Analysis of Generalized Networks - Warsi and Medhin
- Hybrid Pattern Recognition Approaches to Image Analysis - Warsi

HAMPTON UNIVERSITY

- A Study of the Control Methods for the Stiffness Problems and the Jump-over Condition Appearing in a Numerical Analysis of a MHD System - Choi and Shah
- Solution of Elliptic Partial Differential Equations by Parallel Processing Using ADA Language - Shah
- Acoustic Noise Analysis Using a New Concept: Energy Mass and Coupling Enclosing Technique (EMCET) - Choi and Shah
- Parallel Direct Solution of Structural Systems in a Multiprocessor (or Array Processor) Environment - Samba

HOWARD UNIVERSITY

- Numerical Solutions to Partial Differential Equations on Manifolds - Williams

JACKSON STATE UNIVERSITY

- Stochastic Signal Analysis for Naval Surveillance Systems Using Markov-Martingales Random Processes - Gray
- Solving Partial Differential Equations by a Variational Method Using B-Splines as Interpolants - Harbour
- Analytical Studies Relating to the Quartic Solver in an Advanced Monte Carlo Transport Code - Sullivan
- The Harmonic Transform of a Subclass H ($\mathcal{L}$) of Schlicht Analytic Functions and its Application to the Physical World - Tucker

MORGAN STATE UNIVERSITY

- Control of Markovian Systems - Lin
- Mathematical Modeling of Target Detection - Parchment

NORTH CAROLINA A&T STATE UNIVERSITY

- Absolute Regression - Chew and Manuel
- The Use of Automated Symbolic Manipulation in the Computation of Homoclinic Solutions for Autonomous Dynamical Systems - Gruendler

SOUTHERN UNIVERSITY

- A Discriminant Analysis Model Using Screening Data - Causey
- Rational Arithmetic for High Precision Computation - Dyer
- A Tensor Product Form of the Information Matrix of a Particular Least Squares Problem - Means

TEXAS SOUTHERN UNIVERSITY

- Study of Numberical Solutions of Initial-Boundary Value Problems for Nonlinear Wave Equations Arising in Solid Mechanics - Criner
- Numerical Studies of Diffraction Phenomena in Multi-Velocity Media - Obot

VIRGINIA STATE UNIVERSITY

- Solving Real & Complex Valued Differential Systems Via Orthonormalization - Agrawal

APPENDIX C

PARTICIPANT LIST

PARTICIPANT LIST

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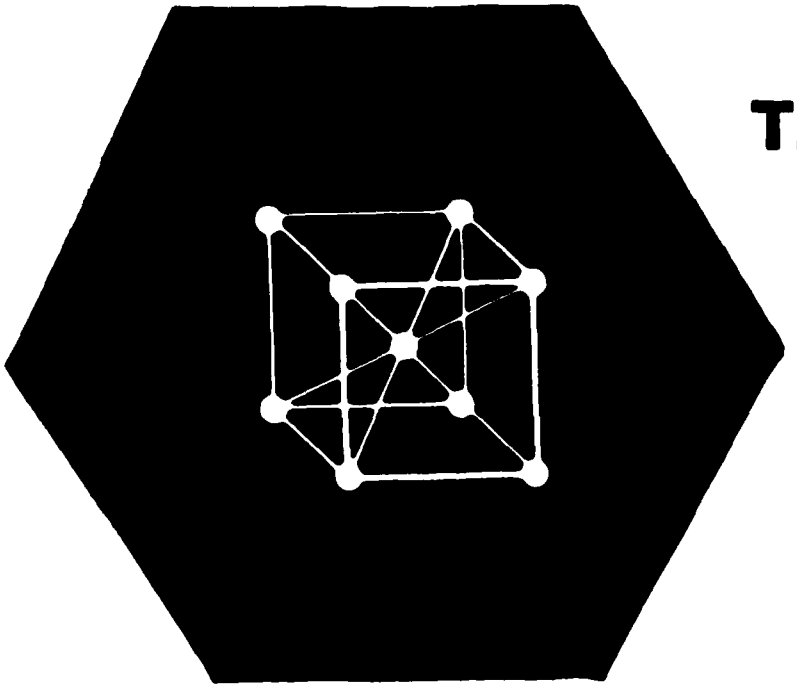
APPENDIX D

THE AGENDA



THE FUTURE IS NOW

HBCU/ONR
PLANNING WORKSHOP

Mathematical Sciences Division

THE HOWARD INN

WASHINGTON, D.C.

OCTOBER 28–29, 1985

THE FUTURE IS NOW

HBCU/ONR Planning Workshop
Mathematical Sciences Division
The Howard Inn
Washington, D.C.
October 28-29, 1985

AGENDA

SUNDAY, OCTOBER 27, 1985

3:00 p.m. and after	Check-In - The Howard Inn 2225 Georgia Avenue, N.W. (202) 462-5400

MONDAY, OCTOBER 28, 1985

7:30 a.m. - 8:20 a.m. Founder's Ballroom (Second Floor)	Registration, Coffee
8:30 a.m. - 9:00 a.m. Founder's Ballroom	Welcome Purpose of Workshop
9:00 a.m. - 9:30 a.m. Founder's Ballroom	Dr. Edward J. Wegman, Head Mathematical Sciences Division Presentation: *Introduction to ONR's Mathematical Sciences Division*
9:30 a.m. - 9:45 a.m. Founder's Ballroom	Mr. Charles Luther, Chairman ONR Historically Black College Council Presentation: *Organization and Objectives of the Historically Black College Council*
9:45 a.m. - 10:30 a.m. Founder's Ballroom	HBCU Presentations: *Research Concepts* *(15-minute presentations/Q&A)*
10:30 a.m. - 10:45 a.m.	Break
10:45 a.m. - 1:00 p.m. Founder's Ballroom	HBCU Presentations: *Research Concepts (continued)*

1:00 p.m. - 2:30 p.m.
Poolside
(Fourth Floor)

Lunch
Speaker: Dr. Charles Bell, Professor
San Diego State University

Presentation:
Ideas on Successful Research Programs in Mathematics

2:45 p.m. - 4:00 p.m.
Founder's Ballroom
(Second Floor)

Scientific Officer Panel

Presentation:
General Explanation of Core Program Directions and Priorities

Program Area	Scientific Officer
Theoretical and Applied Mathematics	Dr. Edward J. Wegman Mr. J. Randolph Simpson
Numerical Analysis and Related Computational Architecture	Dr. Richard Lau
Matematical and Computational Statistics and Special Programs	Dr. Lyle Broemeling Dr. Douglas J. DePriest
Operations Research	Dr. Neal Glassman Mr. J. Randolph Simpson
Statistical Signal Analysis	Dr. Neil Gerr
Discrete Mathematics	Dr. Richard Ringeisen

4:10 p.m. - 4:45 p.m.
Founder's Ballroom

Conduct Core Program Cluster Presentations

4:45 p.m. - 5:45 p.m.
Founder's Ballroom

Conduct Core Program Individual Conferences
(10-20 minute conferences for specific feedback on submitted concept outlines)

6:00 p.m. - 7:00 p.m.
Poolside
(Fourth Floor)

Reception

TUESDAY, OCTOBER 29, 1985

8:30 a.m. - 9:00 a.m.
Founder's Ballroom
(Second Floor)

Coffee

9:00 a.m. - 10:00 a.m.
Founder's Ballroom

Mrs. Anna M. Weston, Section Leader
Contract Negotiation Branch
Office of Naval Research

Mr. Michael McCracken, ONR Resident Representative, National Academy of Sciences

Presentation:
The ONR Procurement Process

10:00 a.m. - 11:00 a.m. Founder's Ballroom	HBCU Presentations: *Research Concepts (continued)*
11:00 a.m. - 11:15 a.m.	Break
11:15 a.m. - 11:45 a.m. Founder's Ballroom	Dr. James Donaldson, Professor Mathematics Department Howard University Presentation: *The Potential for Networking Among HBCUs*
11:45 a.m. - 12:30 p.m. Founder's Ballroom	Dr. Douglas J. DePriest, Scientific Officer Wrap Up: *Participant Recommendations to ONR's Historically Black College Council; Summary; Evaluation Procedures; Adjournment*
12:45 p.m. - 2:00 p.m. Poolside (Fourth Floor)	Networking Luncheon Participants are encouraged to informally discuss networking strategies with Historically Black College Council members and affiliated researchers

PARTICIPATING INSTITUTIONS

Alabama A&M University
Atlanta University
Hampton University
Howard University
Jackson State University
Morgan State University
North Carolina A&T State University
North Carolina Central University
Prairie View A&M University
Southern University - Baton Rouge and New Orleans
Texas Southern University
Virginia State University

This workshop is supported by a grant from the Department of Defense, Office of Naval Research, to the Department of Federal Affairs, Howard University.

APPENDIX E

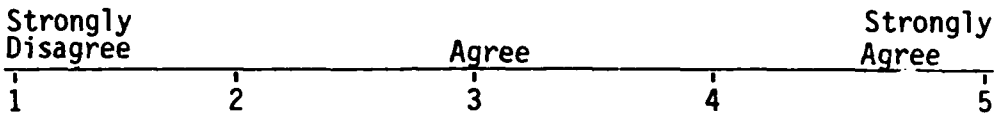
EVALUATION FORM

The Future Is Now
HBCU/ONR Planning Workshop

Evaluation Form

DIRECTIONS: Using the following scale, indicate the number which corresponds closest to your agreement or disagreement with the following statements.

ASSESSMENT SCALE



LOGISTICS

____ 1. Workshop facilities and meeting arrangements were adequate.

____ 2. Hotel accommodations and personnel were pleasant.

____ 3. Travel logistics, including the express ticket handling, were satisfactory.

____ 4. Meal quality was high.

____ 5. Food and beverage service was properly executed.

____ 6. Written and verbal logistical instructions were clear.

____ 7. Federal Affairs staff was friendly and helpful.

FORMAT

____ 8. ONR presenters were instructive in explaining the

____ a. general focus of the Mathematical Sciences Division.

____ b. organization and objectives of the HBC Council.

____ c. core program area directions and priorities.

____ 9. Core program cluster presentations provided indepth information.

____ 10. Adequate time was allowed for general give-and-take during the cluster presentation I attended.

____ 11. Substantive information was received from the ONR Scientific Officer with whom I held my individual conference.

____ 12. Substantive information was shared about my institution and its mathematical sciences program during my individual conference.

____ 13. I am leaving this workshop with:

____ a. definite ideas on successful research programs in mathematics.

____ b. a clear assessment of how my institution's concept outlines were received by ONR.

____ c. knowledge of the ONR procurement process and things I must do to be successful.

____ d. a sense of the potential for networking among HBCUs.

____ e. a better understanding of the research interests of my colleagues at other HBCUs.

____ f. a plan of action for when I return to my campus.

****

FOLLOW-UP

In order for you to submit a competitive proposal to the ONR, what kinds of follow-up assistance do you believe you will need. List three specific kinds of assistance in priority order.

1. _____

2. _____

3. _____

COMMENTS

END

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